18. Draw the Pinout diagram of 8051 and explain each pin.

19. Create a comprehensive assembly language program for the 8051 microcontroller to perform a specific task, detailing each instruction.

20. Estimate the role of serial communication interrupts in the 8051 microcontroller, discussing their applications and advantages in embedded systems.

NOVEMBER/DECEMBER 2024

23PEPH34C — MICROPROCESSOR 8085 AND MICROCONTROLLER 8051

Time : Three hours Maximum : 75 marks

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SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define the term "microprocessor'

2. List the different types of addressing modes used in the 8085 microprocessor.

3. What is the purpose of a Digital to Analog Converter (DAC) in microprocessor applications?

4. Identify two applications of the 8085 microprocessor in real-world scenarios.

5. Interpret the key features of the 8051 microcontroller.

6. What is the function of the internal RAM in the 8051 microcontroller?

7. Give any two the arithmetic instructions used in the 8051 microcontroller.

8. What is the significance of the CALL instruction in the 8051 microcontroller?

9. What is an interrupt vector table, and why is it important in the 8051 microcontroller?

10. List the types of interrupts available in the 8051 microcontroller.

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Build the function of the Programmable Peripheral Interface 8255 and its control word format.

Or

(b) Explain the significance of data transfer schemes in microprocessor interfacing.

12. (a) Utilize the interfacing of a stepper motor with the 8085 microprocessor, including the necessary components and their functions.

Or

(b) Illustrate the process of interfacing a seven-segment display with the 8085 microprocessor.

13. (a) Categorize the memory organization of the 8051 microcontroller, focusing on the role of external data memory.

Or

(b) Explain the function of input/output ports in the 8051 microcontroller and how they are utilized in interfacing.

14. (a) Examine the process of accessing external data memory in the 8051 microcontroller.

Or

(b) Describe the rotate and swap operations in the 8051 microcontroller's instruction set.

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15. (a) Classify the significance of interrupt priority in the 8051 microcontroller.

Or

(b) Analyze the process of interfacing an LED with the 8051 microcontroller using interrupts.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Analyze the role of interrupts in the 8085 microprocessor and discuss how they enhance the functionality of a microprocessor system.

17. Elaborate the challenges and solutions in interfacing analog sensors with the 8085 microprocessor for measuring physical quantities like temperature and strain.